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Testimony Before the Committee on Resources
United States House of Representatives

Hearing on H.R. 4650 - Equus Beds Division of the Wichita Project
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The City of Wichita, Kansas has had water supply wells in the Equus Beds Aquifer for over 60 years, and the aquifer has been a major source of the City's drinking water. However, because of excess pumping from the aquifer by municipal and agricultural users, water levels in the aquifer had declined up to 40 feet from their pre-development levels by 1992. Because of this over development, the Equus Beds aquifer is threatened by saltwater contamination from two sources. One source is natural saltwater from the Arkansas River located along the southwest border of the City's wellfield. The other source is oilfield brine contamination left over from the development of oil wells in the Burrton area in the 1930's, located northwest of the wellfield. Groundwater modeling by the Bureau of Reclamation indicates that the chloride levels, which are an indicator of salinity, could exceed 300 mg/l in much of the wellfield by the year 2050. This would be above the 250 mg/l standard for drinking water. In order to protect the water quality of the area, steps must be taken to retard the movement of the salt-water plumes.

In 1993 the City of Wichita began implementation of a unique Integrated Local Water Supply Plan that is intended to meet the City's water supply needs through the year 2050. By the year 2050 it is projected that the City's water supply needs will almost double what they are now. The City's Plan uses a variety of local water resources to meet water needs, rather than requiring the City to transfer water from a remote reservoir in Northeast Kansas. A key component of the Plan includes an Aquifer Storage and Recovery (ASR) project to recharge the City's existing wellfield in the Equus Beds Aquifer.

The excess pumping from the aquifer, and the resulting water level decline, has created a storage volume of almost 65 billion gallons that can be used to store water. The basic concept of the City's ASR project is to capture water from the Little Arkansas River and use it to recharge the aquifer. Computer modeling, and past experience at other sites throughout the country, has found that by recharging the aquifer a hydraulic barrier can be created that would retard the movement of the salt-water plumes. In addition, the 65 billion gallons that could be stored in the dewatered portion of the aquifer could be used as a component of the City's water supply.

Unfortunately, all of the "conventional" water rights in the Little Arkansas River have already been allocated. However, excess flows in the river, which occur only after it rains or snows, have not been allocated. Computer modeling has predicted that there are enough days of excess flow that enough water can be captured to allow the aquifer to be recharged and become a valuable component of the City's water supply. The modeling predicts that if the City builds an ASR system with the capacity to capture up to 100 million gallons per day, that it would still capture only a fraction of the water flowing down the river, and it would not have a negative impact on the river.

The City intends to capture water from the river using two techniques, either by using “bank storage” wells or by pumping directly from the river. “Bank Storage” wells take advantage of a unique geological condition that occurs along the river. As the river rises above the base flow, water is temporarily stored in the river’s banks, but as the flow in the river declines, the water in the banks discharges back into the river. The City intends to drill wells adjacent to the river that will capture “bank storage” water and induce river water to replace the water pumped.

The City recognized that some of the concepts included in the proposed ASR project have not been done before, so to prove the feasibility of those concepts the City completed a five-year Demonstration Project. During the Demonstration Project, which was done in partnership with the Bureau of Reclamation and the US Geological Survey, the City constructed a full-scale well adjacent to the Little Arkansas River, a river intake and a water treatment plant, and a variety of recharge facilities. To prove that the recharge project was safe, over 4,000 water samples were collected and analyzed for up to 400 different potential contaminates. During the Demonstration Project over one billion gallons of water were successfully recharged into the aquifer, and the City was able to prove that excess flows in the Little Arkansas River could be captured and recharged, and that it can be done without harming the aquifer.

The full-scale ASR project, which will be constructed in phases, will capture and recharge up to 100 million gallons per day, and will cost approximately $137 million. All of the water that will be recharged into the aquifer must meet drinking water standards, and will be monitored and regulated by the Kansas Department of Health and Environment and the U.S. Environmental Protection Agency.

Normally, when surface water is developed for a water resource, it requires the construction of a reservoir. A reservoir that would provide the same storage as this ASR project would probably consume around 25,000 to 30,000 acres of prime farmland. It is projected that the ASR project will use less than 400 acres of farmland.

The City of Wichita and others believe that the ASR project is a Win-Win project, because it appears that all of the stakeholders receive benefits from the projects. As a result of this project:

The City develops a water supply source that will allow it to meet its water supply needs through the year 2050.
The water quality of the wellfield is protected from salt-water contamination.
There is no requirement to curtail irrigation to restore water levels and protect water quality.
Irrigators will have lower pumping costs because water levels will be higher.
Low flows in the Little Arkansas River will improve, because additional water will “leak” from the Equus Beds back into the river.
The project uses less land than any other surface water development project.

The City has already implemented some components of the Integrated Local Water Supply Plan, including implementation of a water rate structure designed to reduce water consumption, and a greater emphasis on using water from Cheney Reservoir, and a corresponding reduction in water pumped from the Equus Beds. That alteration in water use has already allowed water levels in the Equus Beds to rise over 20 feet in some areas.

Phase I of the ASR Project, which is currently being designed, will have the capacity to capture and recharge up to 10 million gallons per day of water from the Little Arkansas River by using Bank Storage wells. The location of the first recharge facilities is intended to begin the formation of a hydraulic barrier to the movement of salt-water plume from the Burrton area. It will take almost 10 years to construct the entire full-scale project.

The City believes that this project represents a new approach to developing water resources, while at the same time protecting an existing water resource from contamination. The City of Wichita therefore urges support for federal assistance for this unique project.